JUNE 2013 ISSUE

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

Contact: C. Scholl

PREVIOUS ISSUES

May 2013 GO

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Arrivals/Departures

Safety Stats

Quote of the Month: "There is a single light of science, and to brighten it anywhere is to bright
Asimov

NOTE FROM OUR CHAIR: Thomas Roser

The hot days arrived a little earlier than planned to finish the RHIC run while the temperatures are still lower. However, the many improvements to air-conditioning are paying off and we had minimal heat related machine downtime so far. For the last month of this year's run RHIC has settled in to excellent and steady running with high performance and high availability. During this run we will have accumulated an integrated luminosity of almost 500 inverse pico-barns or about four times the previous maximum integrated luminosity at each STAR and PHENIX 500 inverse pico-barns means that there were about 25 trillion proton-proton collisions in each of the two detectors.

The budget is still not final for this fiscal year but all indications are that we will have a reasonable budget and that we should plan for a start of the next run at the beginning of January next year. The biggest upgrade projects during the summer are the completion of the electron lens, the installation of the new superconducting storage cavity and the first year of installation of the equipment for the Coherent electron Cooling test. This will be another busy summer at C-AD.

DID YOU KNOW??

A bunch of your coworkers took part in the Survival (Mud) Race on May 4th? Take a look at some of the *photos* we were lucky to get!

Check out who received an employee Service Award this year! 2013 Collider~Accelerator Dept. employees who received a Service Award are listed *here*. Last Years Service Awards are listed *here*.

The C~AD BBQ has been announced to be on July 10th! ?

Naomi Baer received recognition for perfect attendance 2012!

Ernest Courant's Last Day was May 22, 2013! We will miss him greatly, here are some *photos* of the gathering that day.

***** END OF RUN PARTY!! JUNE 7 @ 4:30PM IN 911A LOBBY *****

EVENTS/SEMINARS...

Check out the *BNL Calendar* for upcoming events & Seminars or the *Upcoming Conferences & Workshops* page for workshops and Conferences happening at BNL.

June 6 ~ (Bldg 510|2:30) Condensed~Matter Physics & Materials Science Seminar, "TBA" Presented by Kevin Bedell (Boston College)

June 6 ~ (Bldg 510|3:00) Joint High Energy Physics/Instrumentation Seminar, "New detector to search for the Dark Matter, slightly differently" Presented by Jaroslav Va'vra (SLAC)

June 10 ~ (Bldg 510|11:00) Condensed~Matter Physics & Materials Science Seminar, "Polarized neutron scattering investigations on magneto~electric materials with complex magnetic structures" Presented by Kazuhisa Kakurai (JAEA)

June 14 ~ (Bldg 510|2:00) Nuclear Physics & RIKEN Theory Seminar, "From the QCD flux tube to the integrable theory of quantum gravity and back" Presented by Sergei Dubovski, (NYU, Physics Department)

June 19 ~ (Berkner Hall [Aud]|4:00) 488th Brookhaven Lecture, "TBD" Presented by TBD

June 20 ~ (Berkner Hall [Aud]| 4:00) Brookhaven Women in Science Event

****JUNE 25~28**** ~ (Berkner Hall) **2013 RHIC & AGS Annual Users' Meeting** ~ "Accelerator Discovery: A Collider for Hot Science". REGISTRATION DEADLINE: JUNE 21 For more information please visit http://www.bnl.gov/aum2013.

WHAT'S GOING ON IN OUR NEIGHBORHOOD?

Interested in Cycling? Why don't join in on the *Tour de Cure* at the Pindar Vinyards and the *Bike MS: Traffic Free Ride at Bethpage State Park & in JULY Huntington Bicycle Club's Gold Coast Tour on Long Island*!

Interested in Running or Walking? Check out the lirunning June Calendar for the following events: New Hyde Park 8k, Moriches Community Center Anthony Parlato Mem 5k, Mattituk 5k, LIRRC Wed Night Summer Series, healthy Hemstead 5k, NYS Park Summer Series, etc..

For the Kids: American Idol (August) @ The Nassau Coliseum.

Stony Brook Events:
Jewels & Jeans 2013: June 18 Dress in your Finest/ Live & Silent Auction.
Horse Drawn Carriage Rides: Through Stony Brook Village July 11 ~August 29, 6pm to dusk/ $3 pp
LI's Auto Racing Heritage: July 13~Sep 2 (10~5) $4pp $2 for kids. See & Hear about LI's 5 race tracks as well as vintage memorabilia.
Sunday Summer Concerts on the Green: July 14~Aug 25 (7~9) on the Stony Brook Village Green.

June 7~9~ Nassau Coliseum the *United Ink Summer Vibe Tattoo Festival*!

Join us June 7~9 2013 for the ultimate tattoo experience! The United Ink Summer Vibe Tattoo Festival offers you a unique trip into the tattoo and body art lifestyle, music and culture. United Ink is a convention unlike any other. Completely open to the public, child friendly (kids under 12 get in free) before 8 pm, with kid and family friendly magic shows, temporary tattoos and much more! And for the grownups we have tattooing from artists all over the world, piercing and body modification, art, contests, clothing, jewelry..Get the picture?? We have contests galore; from Miss Summer Vibe Pin~Up, a body painting contest, a best in drag, pole dancing and most Extremely Modified Person! And of course many tattoo contests. All contests will have great prizes…so if something peaks your interest, make sure you sign up at the registration desk..or email for more info.

DAY AT THE VINEYARDS…

Macari Vineyard ~ [MATTITUCK] No Events Posted

Duckwalk North ~ [SOUTHOLD] June 29 (7~10pm) ~ Opera of the Hamptons $45 pp
Duckwalk South ~ [WATER MILL] No Events Posted

Castello di Borghese Vineyard & Winery ~ [CUTCHOGUE] ** Vineyard Tours & Wine Tastings Every Saturday @1pm & FREE Jazz Every Saturday (2~4) with Marguerite Volonts** June 23(2~4pm) Olive Oil Showdown & Tasting;

Jamesport Vineyards ~ No Events Posted

Martha Clara Vineyards - [RIVERHEAD] June 8(1~5) Live Music: Jukebox Explosion; June 9 (1~2:30) Wine & Artisanal Cheese Pairing/(1~5)Live Music: Sugar & Spice Soul band; June 15 (1~5) Live Music: Bobby Nathan Band; June 16 (10am) Vines & Canines EDU Vineyard walk/(1~5) Live Music: Sea Monkeys; June 21 (7:30pm) Summer Solstice; June 22 (2~5) Live Music: Keith Maguire; June 23 (1pm) Wine 101/(1~5) Live Music: Rattlesnake Dawn; June 29 (1:30~5:30) Live Music: Reggae w/ the Roots; June 30 (1~5) Live Music: Firefly.. Upcoming in (JULY) 4 (10am) Vines & Canines EDU walk (1~4) Live Music: Two Man Acoustical Jam; 6 (2~6) Live Music: Playn & Symple; 7 (7:30) Flash back to the 80's with White Wedding Band; 13 (1~5) Live Music: Keith Maquire

Palmer Vineyards - [RIVERHEAD] *Courtyard Reservations available 5/18 ~ 8/31* June 7 (5:30~7:30) Paint & Sip

Pindar Vineyards - [PECONIC]

Baiting Hollow Farm Vineyard ~ [CALVERTON] *Music every Sat & Sun from (2~6pm)* June 1: Southbound w/ BBQ & **FREE** Line Dancing Instruction; June 2: Denise Given Band; June 8: Tommy Keys & Ricky Roche; June 9: Tommy Keys; June 15: The Smoking Gun; June 16: F&G Band, June 22: Tommy Keys; June 23: The Denise Given Band; June 29: Tommy Keys & Acoustic Soul; June 30: Smoking Gun; (July) 4: Acoustic Rock; (July) 5: Acoustic Soul; (July) 6: Tommy Keys & Ricky Roche; (July) 7: Southbound; (July) 13: Tommy Keys & Top Cat; (July)14: Acoustic Soul

Paumanok Vineyards ~ [AQUEBOGUE] June 7 (7pm) ~ Wine Dinner at Jamesport Manor Inn $65 pp

NOTE FROM OUR ADMINISTRATION: Stephanie LaMontagne-McKeon

Please take the time today to be proud of your accomplishments in FY 2013 and note that the "sky is not falling". Despite essentially flat budget guidance and continued uncertainty about the final FY 2013 budget, an increase in power cost relative to last year, an unanticipated and costly rework of the Siemens rotor and worsening manpower shortages, a RHIC run of 17 weeks is nearing completion and progress on both R&D and various upgrades has continued uninterrupted. Additionally, technical staff have been called upon to step-up support for the Isotope Research and Production Program, transferred to C-AD in FY 2011, and to assist the newly added Accelerator Test Facility in planning for an ambitious upgrade program.

In summary, if you are looking for good news, look around you to the people you work with every day. Collectively, our commitment to C-AD's mission is inspiring.

NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer

This year's RHIC Run will come to an end on 10 June 2013, with again new records in peak and average luminosity and polarization. Congratulations to Vahid Ranjbar, the Run Coordinator, and the whole team. This run used, for the first time the new polarized source, which now provides more intensity than the old source. However, we cannot use all of the available intensity in RHIC since the beam-beam interactions limit the number of particles we can store without loss of polarization. This limit will be addressed in the future with the electron lenses, which are partially installed and have their hardware under commissioning.

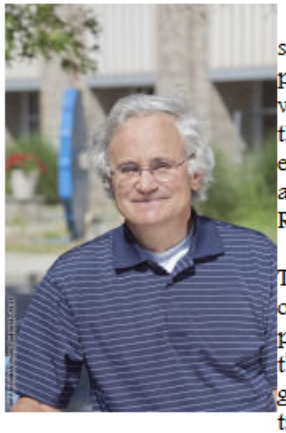
In preparation for polarized ^{3}He operation in the future, ^{3}He has been accelerated again in the Booster and AGS. This was the second test, and the intensity increased by a factor of 3.3 compared to last year. With two additional bunch merges in the AGS, which can still be implemented, we can now reach 3-4x10^{10} ions/bunch, sufficient intensity to consider collider operation. Congratulations to everyone involved, in particular the EBIS team, the RF and injector groups, Haxin Huang, Kip Gardner and Keith Zeno.

On 11 and 12 June the NPP Program Advisory Committee will meet and discuss the STAR and PHENIX beam requests for Run-14 and Run-15. We expect to have a long Au-Au run at 100 GeV/nucleon next year, and possibly a Au-Au run 7.5 GeV/nucleon and/or a 100 GeV polarized proton run. Run-15 will likely see a new operating mode with p-Au, and may include other new modes such as p-Au, p-Al, p-Cu, and h-Au. Run-15 may also include another 100 GeV polarized proton run.
To prepare for the next runs the RHIC Retreat will take place in the Brookhaven Center on 25 and 27 July 2013, with a closeout session on 31 July 2013.

Meanwhile, the NSRL Run-13B started on 29 May 2013 and will continue until 28 June 2018.

The catalog of all Technical Notes is http://www.rhichome.bnl.gov/AGS/InternalReports.html, and it is linked from both the Department and Accelerator Division home pages.

NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Phil Pile



We are one week away from the end on RHIC Run 13. We plan to end the last store at 0800 on Monday, 10 June and prepare RHIC for the summer shutdown. Overall this run has been very successful with machine luminosity performance about midway between the minimum and maximum projections and beam polarizations near the 55% goal. The STAR experiment reached its modest goals around mid-May and continues to improve statistics while commissioning their new HFT PXL detector system. PHENIX, with lofty goals beyond our maximum projections, will come to within about 60% of their goals by the end of the run. The total weeks of cryo operation for this run is 17.4. We plan to begin Run 14 around the first of January 2014. We expect Run 14 will be dominated with full energy gold running. The STAR solenoid/detector system will once again be rolled out from the IR into the assembly building to install the HFT detector. Before this happens the whole detector will be raised up about a centimeter to better match the optimum RHIC beam position in the IR.

The move of the g-2 experiment to FNAL is on schedule. The big event for this month is the shipment of the 50 foot diameter superconducting coils/cryostat assembly to FNAL. Although Emmert International has been contracted by FNAL to make the move, detailed coordination with BNL (C-AD in particular) was/is essential to make it happen. Individuals from Emmert, along with trucks and equipment, are now here making final preparations for the move. The transfer of the coils/cryostat assembly to FNAL was approved by Doon Gibbs at the end last week. Those of you who came into the main gate this morning may have noticed the absence of several large trees that lined the middle of the entrance/exit road to the gate. The removal of these trees, and others, is a part of the overall "path clearing" required to make room for the truck that will transport the coil/cryostat assembly out the main gate to a barge near Smith Point where it will be transported via the Mississippi river to FNAL. The onsite part of the move is planned for Sunday, 16 June, with the transport down William Floyd to Smith Point scheduled for the evening of 17 June.

NSRL Run13B for NASA began on 29 May and will continue through 28 June.

BLIP has been running since 17 December and will continue through July.

NOTE FROM OPERATIONS: Paul Sampson

RHIC run 13 ends this month. With the end of Physics Running comes the start of Shutdown 13. As is the norm, major upgrades, improvements and other large projects are planned for both the experiments and the accelerators.
In RHIC, testing of the blue e-lens with electron beam is planned for later in the month while progress on the Yellow e-lens continues. Pre-tests the Superconducting Solenoid are nearly complete with possible high current later this month. RHIC continues to run well, delivering good luminosity to the experiments and suffering no major failures.
In addition to normal running, other modes continue to be developed behind the Physics program. Setup with Helium in the injectors, through AGS extraction, was successfully completed late last month with all expected goals and parameters attained. In addition to the scheduled APEX and development periods, a set up for low energy running in which rigidity needed for a future low energy gold run will be emulated using protons is planned.
In the AGS, profiles from the newly installed e-IPM are being routinely viewed while development and continues with the hopes of turn-by-turn capability before the end of the run. Access for repair and continued installation in the AGS continues behind long RHIC stores when necessary.
The LINAC and Booster continue with stable, reliable operation providing high polarization protons for RHIC and high intensity protons for BLIP and NSRL.
NSRL Run 13B began on May 29th and will run through the end of June. BLIP will continue to run all month.
End of run activities have begun and include; Access controls critical device testing, VODH code installation and testing and a possible DX magnet movement. Once RHIC is beam secured, areas will be re-designated and posted for ODH and Radiation as appropriate.
Plans for the upcoming shutdown are being finalized and include final installation of the e-lens as well as work on the 56MHz RF, CeC and many other projects. Details of the shutdown work will follow.

To view a list of the approved work for maintenance days or the shutdown, go the Job Request System and select the appropriate date. This link is behind the firewall and requires privileges to view.
For schedule updates see: This Week, which can be viewed by all.

NOTE FROM ACCELERATOR R&D DIVISION: Ilan Ben-Zvi

A joint project supported by the BNL LDRD grant and ATF users from SUNY SB and Imperial College (UK) achieved a doubling of the proton energy from a laser-driven plasma wakefield acceleration from the previously demonstrated 1.5 MeV to 3 MeV. The new scheme uses a dual-pulse laser; the first (lower intensity) laser pulse shapes the plasma density profile, the second (main) laser pulse drives a shock wave more efficiently. He+ acceleration was also demonstrated.

A Euclid Techlabs experiment at the ATF demonstrated the first tunable energy chirp compensating system. Adjustable gap plates of Alumina (Al_2O_3) were used to decrease the energy spread of an electron bunch using the wakefield in the structure.

Work in the muon acceleration group has been carried out on a new variant of the 6D-cooling scheme commonly referred to as the Guggenheim. The new variant, referred to as a planar snake, consists of a linear channel in which dispersion is created by small angular tilts to the focusing solenoids. This new approach allows for reduced axial fields in the solenoids as well as simultaneous cooling of both signs of muons.

The proof of principle Double Quarter Wave Crab Cavity, a prototype for the LHC luminosity upgrade, has been cooled to liquid helium temperature and is ready for superconducting RF testing. The cavity is installed in the Small Vertical Test Facility in building 912. This would be the first RF testing, warm or cold, for a compact crab cavity of such type.

Preparations to insert the copper cathode into the ERL gun are in progress. The cathode sled in surveyed and aligned on the gun cathode table. Insertion is planned for June 10. This cathode will not produce any beam, but will allow us to study and condition potential multipacting barriers in the cathode choke region as well as commission the cathode insertion system.

Components continue to arrive for the 56 MHZ cryomodule: the vacuum vessel, the multi-layer insulation blankets and fundamental power coupler. The cavity assembly to the LVTF insert progressed well in the class 100 Mezzanine clean room and is expected to be complete within a week. Following that the insert will be moved to the class 10,000 area for wiring thermal sensors, installation of RF cables and motion system.

Accelerator R&D Physics group continued working on the eRHIC design,

ERL, the Coherent e-Cooling proof-of-principle (CeC) experiment and the electron cooling for the low energy RHIC operations (LEReC).

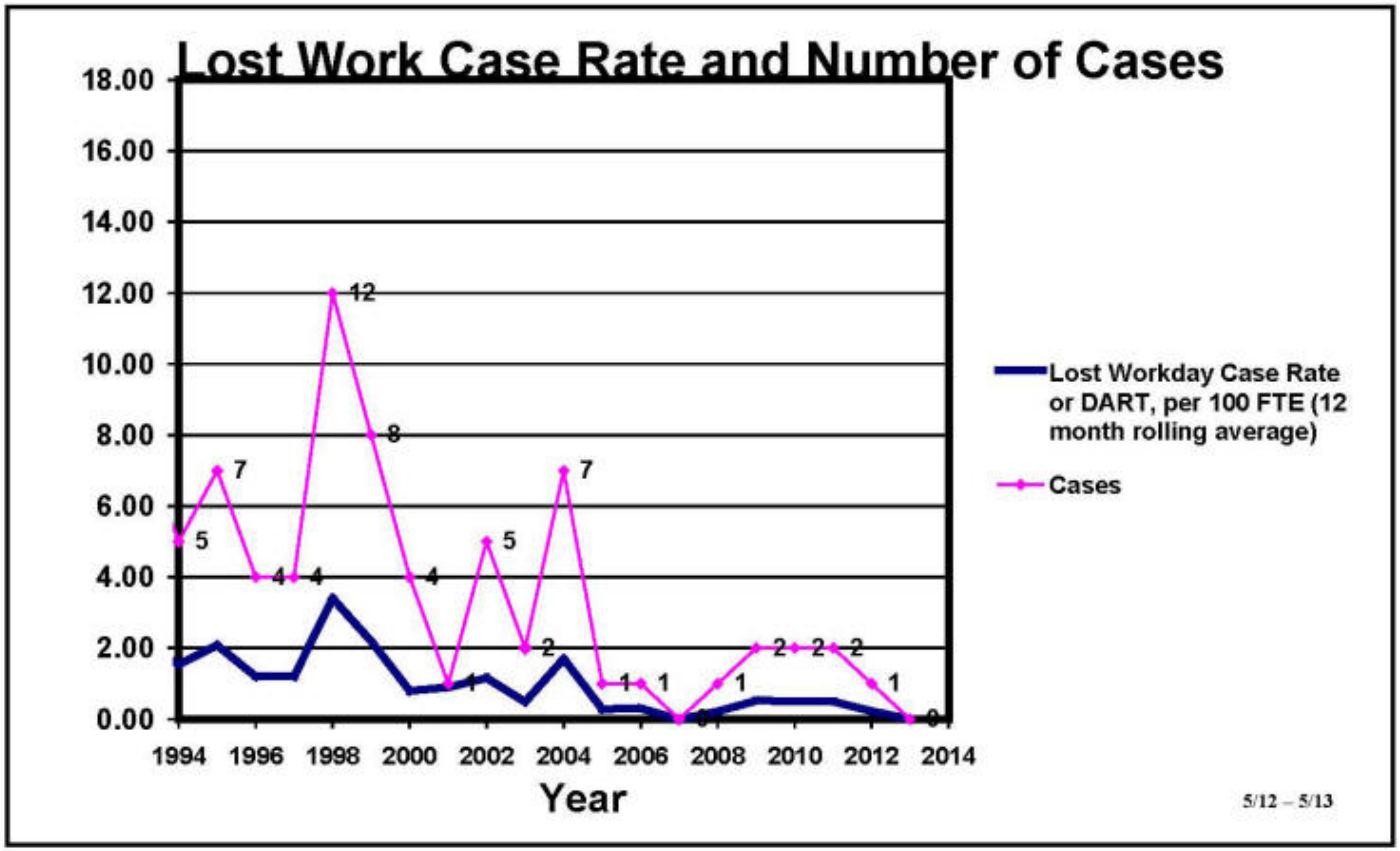
The eRHIC design activities are focused on finding an affordable way of building a10 GeV ERL colliding with cooled RHIC hadron beams, with a luminosity ~ 10^33. Physics requirement for detectors' kinematic reach made it clear that the proton beam in RHIC must be cooled to about a tenth of its current emittance. The cooling characteristic time should be a few minutes.

The CeC project progresses steadily with a infrastructure building-up in the IP2 area. Recently the CeC's 112 MHz SRF gun had been delivered from Niowave and passed first acceptance tests. It would be installed, together with a set of other equipment, into the IP2 during the up-coming RHIC shutdown. Two room temperature RF cavities are under preparations for there moving into IP2.

Finally, the order for 8-meter long CeC FEL system had been placed with the Novosibirsk Budker Institute for Nuclear Physics and the expected delivery is November 2014.

Accelerator physics studies and developing of the system requirements for Low Energy RHIC electron Cooling (LEReC) are progressing fast. The goal is to develop the accelerator physics design of LEReC, which will be reviewed by external team of experts in mid-August 2013.

SAFETY STATS: Peter Cirnigliaro



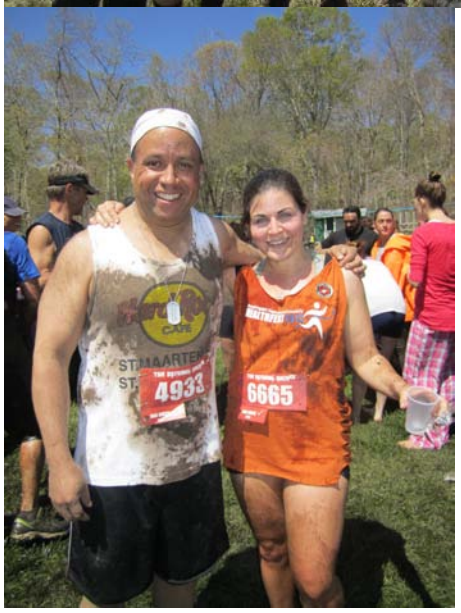
C-AD Occupational Injury Statistics

	For Year 2012	For Year* 2013
First Aid Cases	5	1
Recordable Cases	3	1
Lost Work Cases	0	0

* Calendar Year through 5/13

SURVIVAL (MUD) RACE MAY 4TH 2013:

A few coworkers took part in the Survival Race on May 4th, including myself. The 5k obstacle course took place in Riverhead, NY and was great fun! If you would like to know more about this race and upcoming Survival Races see http://thesurvivalrace.com/.

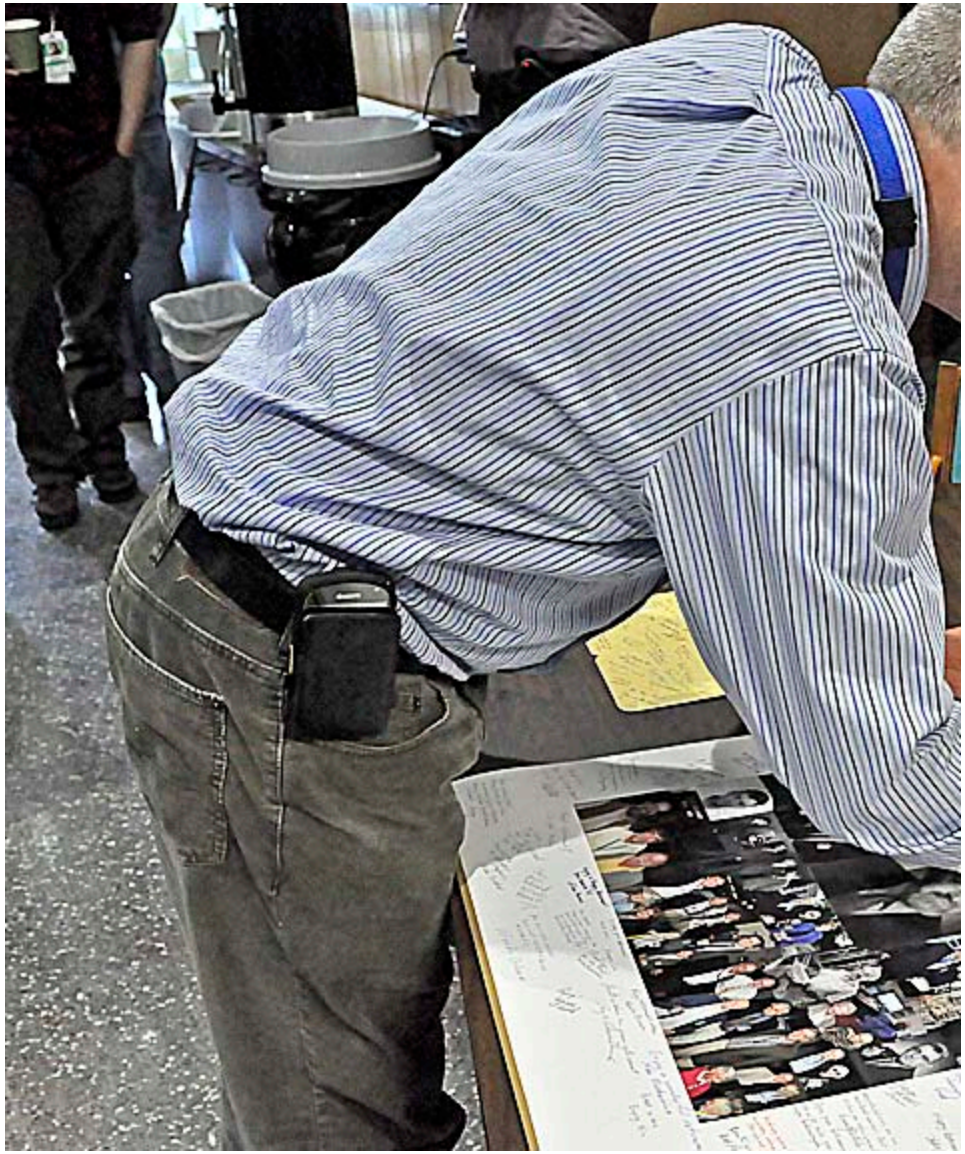


EARNEST COURANT:

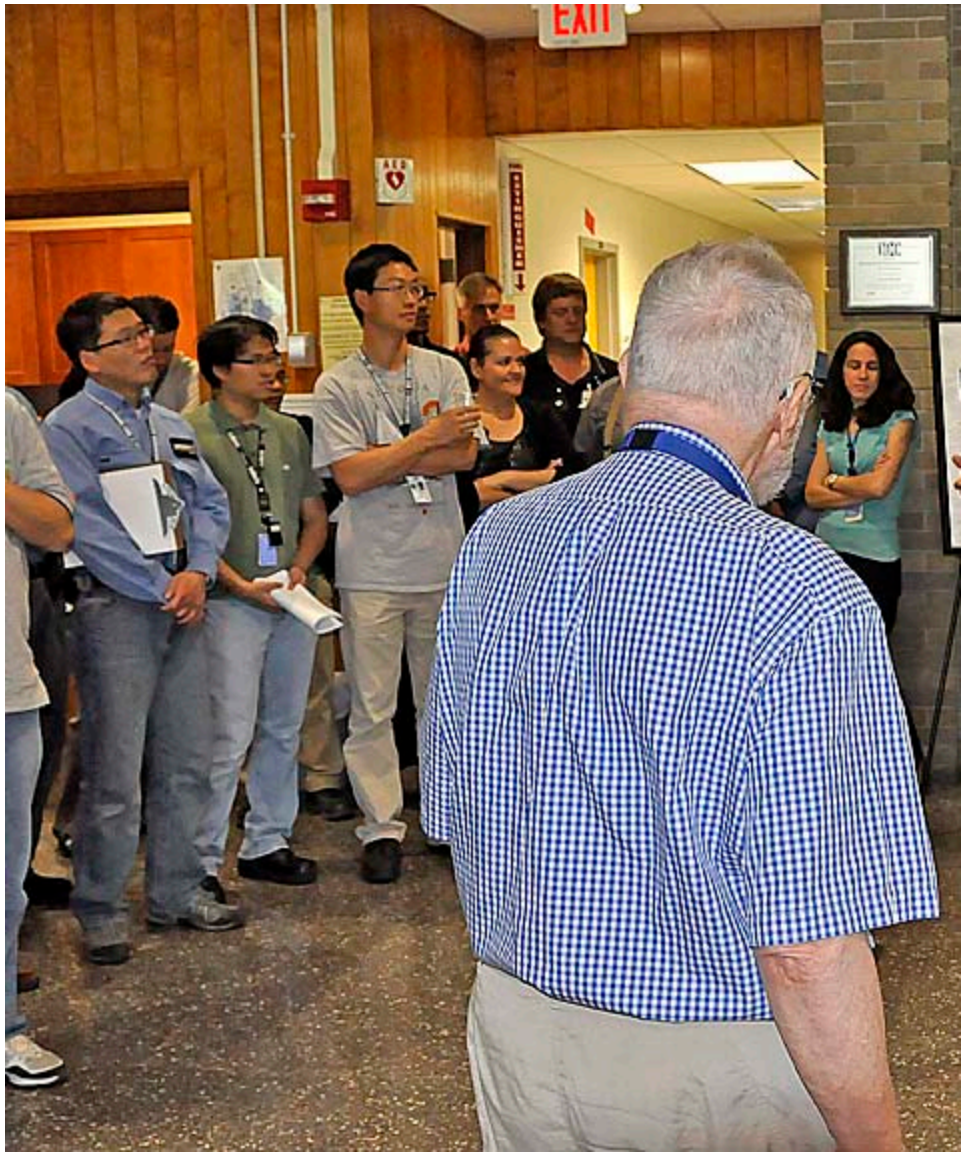
Ernest Courant (born March 26, 1920) is an American accelerator physicist and a fundamental contributor to modern large-scale particle accelerator concepts. His most notable discovery is his 1952 work with Milton S. Livingston and Hartland Snyder on the Strong focusing principle, a critical step in the development of modern particle accelerators like the synchrotron.

Currently, Ernest Courant is a member the National Academy of Sciences, and remains active as a distinguished scientist emeritus at Brookhaven National Laboratory. He has played a part in the work of Brookhaven for sixty years and has also been mentor to several generations of students. In this kind of generative academic influence, he can be compared to his father, the mathematician Richard Courant.

If you would like to read a little more about Ernest check out this *Scienceblogs* posted in 2010 http://scienceblogs.com/brookhaven/2010/06/25/finding-focus-for-the-worlds-a/.




Backwards Clock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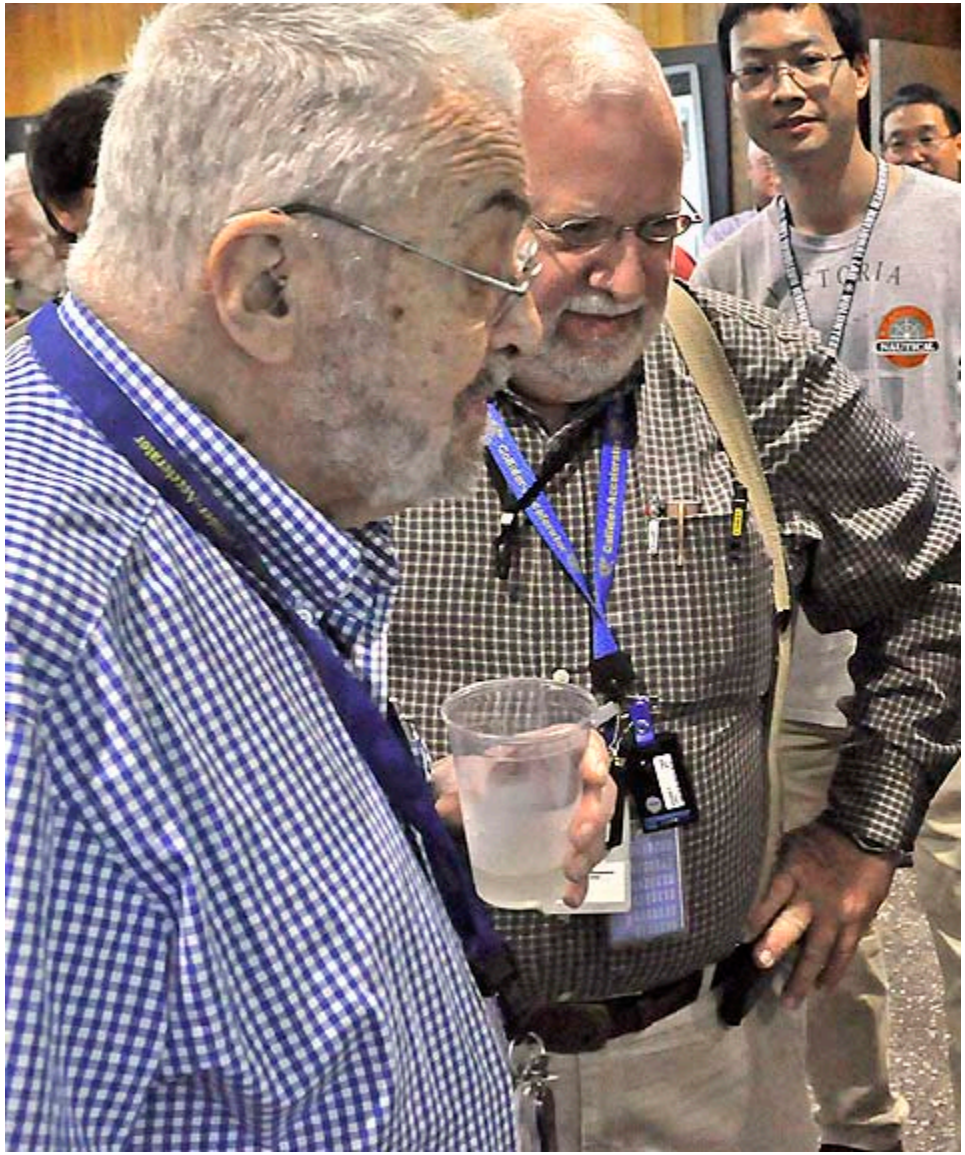
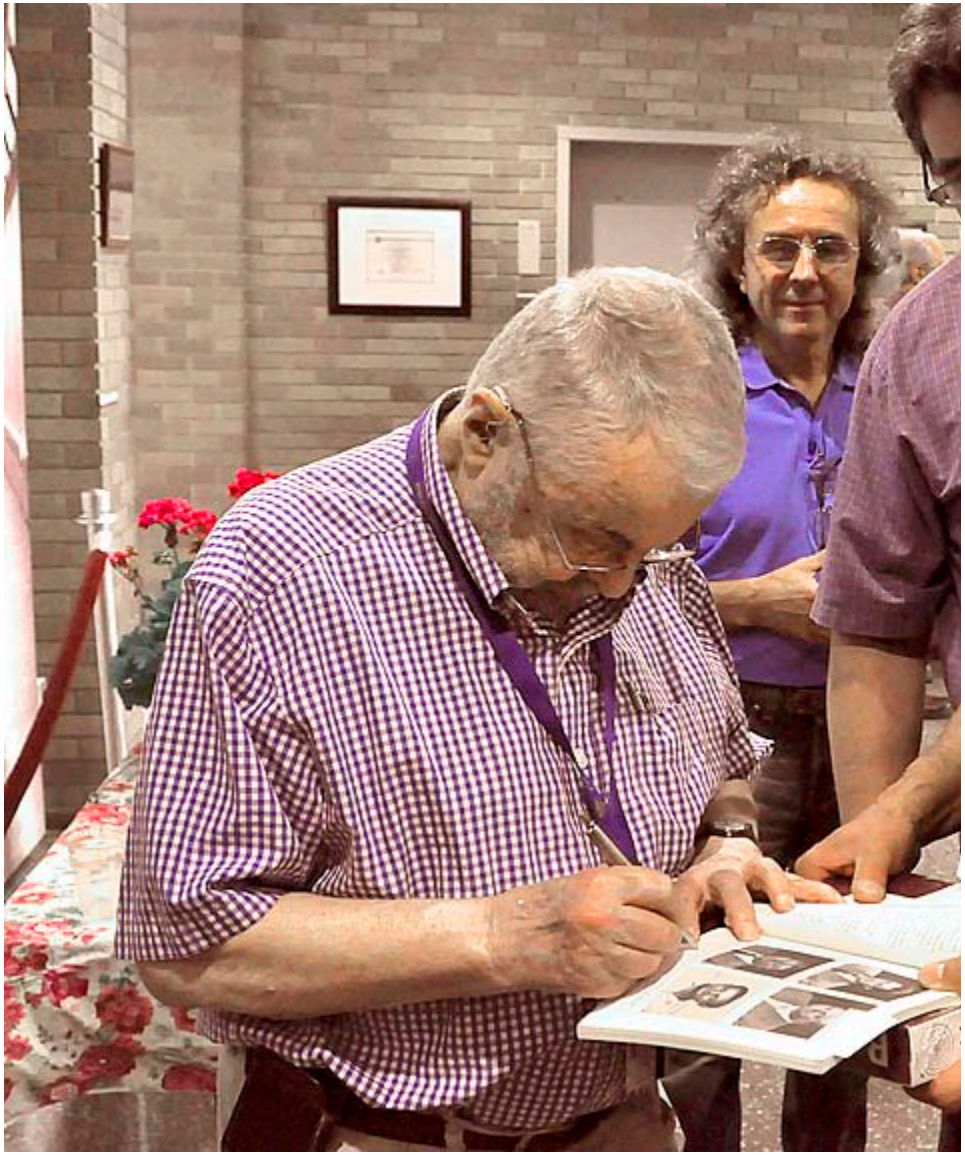
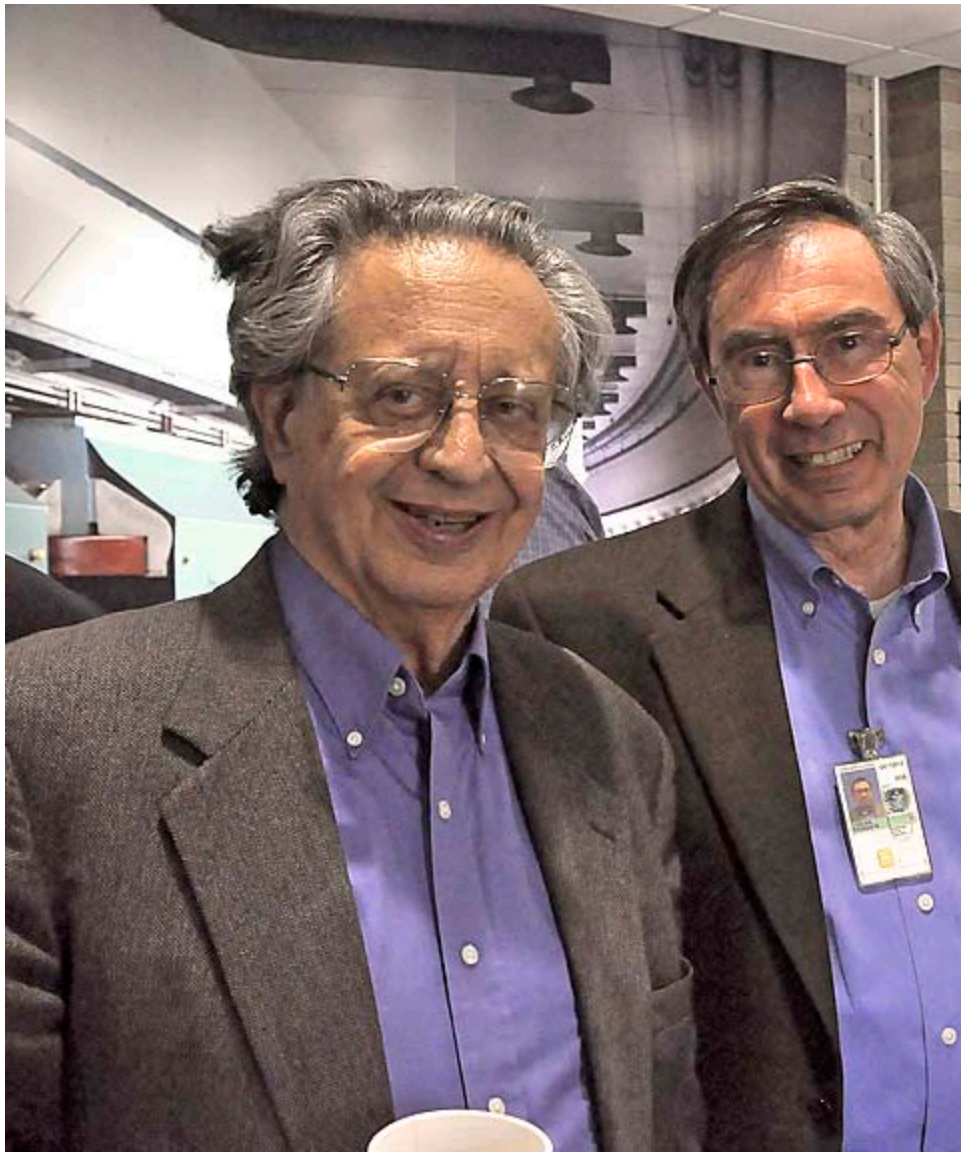
EXTINGUISHER







RIPP BOWMAN PHOTO FILE# DSC-1676-5-22-13


EXIT